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MAN IN NATURE.

L'Homme dans la Nature. Par Paul Topinard. (Paris: Baillière et Cie., 1891.)

IT is with much pleasure that we announce the appearance of a new work from the pen of Dr. Paul Topinard, formerly General Secretary of the Anthropological Society of Paris, and Professor in the École d'Anthropologie. Dr. Topinard is well known in this country as one of the most eminent, if not the most eminent, physical anthropologist in France at the present day, and it is with much regret that anthropologists here have observed the shameful way he has been treated by a faction of the Anthropological Society of Paris, who have done their best to diminish his usefulness and retard the advancement of true anthropological science in Paris. Notwithstanding the troubles and anxieties he has gone through—to which we would not have alluded here had they not been public property, and discussed in French scientific journals—it is gratifying to find that Dr. Topinard has pursued the even tenor of his way, and been able to enrich anthropological science by another of his valuable works, forming the seventy-third volume of the "International Scientific Series."

The work under review is divided into twenty-two chapters. The first contains, in addition to a statement of the scope of the book, a short but interesting history of the development of anthropological science. In the second chapter, its nature, its proper limits, and its relation to biology, ethnology, psychology, and sociology, are pointed out. The term "anthropology" is restricted to the study of man as an animal and a member of a group in the zoological series, in conformity with the acceptation in which it is used by Blumenbach, Broca, Quatrefages, and others. In the third chapter, the various subjects of study included in anthropology, as above restricted, are set forth, and the general principles of zoology on which the distribution of animals in groups of different values rests, the choice of characters on which they are founded, and the differences between race, species, family, and order are indicated.

The methods employed in anthropological research are considered in the fifth chapter. These may be briefly stated as descriptive and anthropometric. As descriptive terms are liable to vary very considerably according to the ideas of different observers, their value has hitherto been much less definite than characters based upon measurement. For some time past the author has been endeavouring to elaborate a system of observation which will render descriptive characters more uniform and trustworthy than heretofore. Having had some practical experience of the plan advocated by Dr. Topinard, we may state that we have been favourably impressed with it, not only for producing more uniform results, but also for saving labour to the observer, facilitating the analyses of observations, and for classifying the latter according to their type.

The character of the hair is dealt with in the sixth chapter. The hair is shown to furnish us with characters which are of importance not only in distinguishing races, but also in comparing man with the animals most nearly allied to him. The author shows that, in respect to their hair, the negro races differ most from the monkeys, while the white races most nearly resemble them, the yellow races being intermediate. In the straight-haired races the hair corresponding to the long coarse outer fur of mammals displaces the woolly hair—the homologue of the woolly under-fur; while in the woolly-haired races the reverse takes place. These characters of the hair would have formed an impassable gulf between the yellow and negro races had not some intermediate forms fortunately been left. The abundant generalization of fur as *lanugo* in the fœtus would go to prove that man descended from a furred progenitor.

The value of statistical maps is discussed in the seventh chapter, and as an example of their use in tracing race-characters, the distribution of the blonde and dark types in France has been taken and illustrated. It is shown, however, that the combination of the descriptive and anthropometric methods gives the most trustworthy results in determining the natural types of man. The latter method is discussed in chapter viii., and the use of indices, projections, seriations, graphic curves, averages, &c., are also explained.

The ninth chapter deals with measurements of the skeleton and the living body, and how these should be made by travellers and others. The directions given for the measurement of the long bones by ascertaining their maximum length is undoubtedly the best method. The proportions which these bones bear to the height of the skeleton (the latter being taken as 100) he gives as follows: humerus 20·0, radius 14·3, femur 27·3, tibia 22·1. To get the stature of the subject when alive, he adds 35 mm. to the height of the skeleton obtained from the detached bones by the above formula. The proportions just mentioned correspond very closely to those of the second series of French skeletons given in the "Éléments d'Anthropologie," and also with Rollet's important observations. Our own observations on subjects which have been carefully measured before dissection, go to support those of Rollet, and to show that the formulæ above given indicate the actual stature as nearly as possible, without adding 35 mm., as Dr. Topinard does. This is probably due to difference in mounting the skeletons—a fertile source of error. We are of the opinion that where it is not possible to get measurements of subjects before dissection in sufficient numbers to establish the formula for the race, it is more trustworthy to do so from the mean stature of the living, than from the height of articulated skeletons. The directions given for measuring the living body and tabulating its descriptive characters, are specially arranged for the purpose of encouraging travellers to undertake anthropometric observations. A model schedule of observations is given, arranged so that the various questions may be answered by a figure or a measurement, which should prove valuable to travellers. The system of measuring the body aimed at in it is to obtain the relative proportions of the several parts, rather than absolute anatomical dimensions; in other words, the author's idea is that it is better that travellers who are not anthropologists, and consequently not trained to anthropological research, should confine their attention to obtaining such measurements as will enable the canon of proportion of the several parts of the body to be made out, and compared in different races to that which obtains in Europeans, rather than attempt to do work which requires previous anatomical knowledge. The measurements are divided into two classes, according to their importance, but all of them are such as any intelligent traveller, with a little practice, should be able to make with accuracy.

Chapters x. and xi. are devoted to the study of the skull and the head of the living subject. A list of the chief measurements of the skull which the author recommends is given. These are to our mind much more satisfactory than any previous list he has produced, and will, we feel certain, be hailed with pleasure by anthropologists in this country, as being quite in accord with their ideas of what the essential measurements of the skull are. This list also agrees more nearly with the measurements used by our fellow-workers in Germany and Austria; indeed, we might even go so far as to say that when an international system of measuring the skull s arrived at (a time which we hope is not far distant), the difference between it and that now propounded by Dr. Topinard will be slight. The most important measurements of the living head, he considers, are those of the nose, and next to them the diameters of the head. As an example of what may be learned from a single craniometric character when systematically studied, the cephalic index is selected, and he alludes with satisfaction to the international agreement recently arrived at regarding the measurements from which it is obtained and its divisions, and shows that it is a character of the first importance for distinguishing types of races.

Having thus prepared the way, he next discusses the connection between man and the animals which approach nearest to him, the distance which separates them, and the relative place which man occupies amongst them. This naturally leads him to the consideration of the characters and descriptive morphology of the Primates. As the subject is a very wide one, he has restricted his investigation to a comparative study of the brain and the skeleton. Chapters xiii. and xiv. are occupied with the evolution of the brain in the vertebrate series, the form and volume of that organ, and the arrangement of its convolutions. The mechanism of the evolutionary transformation of the cranium of the animal into that of man is traced in the fifteenth chapter, and the craniometric characters connected with this transformation are dealt with in the succeeding chapter. The characters of the head, the vertebral column, the thorax and pelvis connected with the quadrupedal and bipedal attitude, are discussed in the seventeenth chapter, and those relating to the attitude of the body and the function of prehension in the eighteenth.

The nineteenth chapter is devoted to the zoometric characters related to the adaptations of the limbs for prehension and locomotion; the muscular and visceral characters connected with attitude are also discussed shortly. Other characters distinctive of man, the anthropoids, and the monkeys, in the vertebræ, the sacrum, mandible, teeth, liver, &c., are pointed out in the twentieth chapter. Retrogressive anomalies, or the accidental appearance in man and other animals of morphological arrangements foreign to the type, but resembling those which occur normally in some other type of animal; rudimentary organs, absolutely useless to man, but which are more or less developed in other animals; and progressive anomalies, are the subject of the twenty-first chapter.

The author concludes his task by devoting the last chapter to a *résumé* of the previous chapters. He classifies the Primates as follows:—

1st Sub-order—Man.		
2nd Sub-order—The Monkeys	1st family,	Anthropoids.
	2nd ,,	Pithecidæ.
	3rd ,,	Cebidæ.
	4th ,,	Arctopithecidæ.
3rd Sub-order—The Lemurs.		

Supposing the distance between the Cebidæ and the Pithecidæ to be 1, that between the latter and the Anthropoids would also be 1, while the distance between the Anthropoids alone, or in conjunction with the other two families, on the one hand, and man on the other, would be represented by 3; the same figure would also represent the distance of the lemurs from the monkeys. We note that Dr. Topinard includes Galeopithecus among the lemurs, although this genus is now accepted by zoologists as belonging to the Insectivora, but this slight error is immaterial.

The important subject of the relationship and descent of man is dealt with more briefly than we could have wished. He shows that man cannot be descended from an Anthropoid, which is essentially a perfected and specialized monkey, and that we must look to a lower source for the origin of the human stem, to one where more generalized conditions obtained; indeed, to a type sufficiently far back in time and low down in the animal series as to be the progenitor of the monkeys and man. The beginning of the Miocene period is pointed out as a very remarkable one in the history of the world, during which many of the initial types of our existing genera were formed, and amongst others the first monkey succeeding the lemurs of the preceding Eocene period. It is during this epoch that we must seek for the stem proper of man, and that common to the monkeys, or to both of these sub-orders. According to Cope, man has descended directly from the lemurs, without passing by way of the monkeys and Anthropoids, the lemurs themselves coming through the Marsupials. Beyond this the genealogy of man is merged with that of the Mammalia, of which the first representatives existed as far back as the Trias.

Regarding the question of the unity or plurality of origin of man the author has not very much to say, and although he has reasoned on the assumption of the monophyletic hypothesis of the human species throughout the work—that is to say, that man has originated from a single stem—he considers that there is not sufficient evidence to show clearly one way or other whether this is the case, or that man has a double stem of origin developed during one epoch, or at two epochs separated from one another by a considerable interval of time. This question has yet to be definitely solved with respect to the monkeys, notwithstanding the fact that some American zoologists have shown that the monkeys of the New World have not the same origin as those of the Old World, which, if substantiated, would support the argument of a double cradle of origin for man—namely, according to the author, one common to Asia and America, the other, situated in some southern continent uniting Africa and Oceania, for the negro.

Whatever the origin of man may have been, the author shows that two periods must be recognized in his history, one before the acquisition of language, which relates to his precursor, and the other after that, during which man properly so-called was constituted.

The author sums up respecting man, the Anthropoids, and the monkeys, by comparing the order of the Primates to a tree. The lemurs are the roots, and give rise to one or several stems. One of these is the stem of the monkeys, a branch of which sends out a bough more elevated than the others—namely, that of the Anthropoids. Another, of which the point of origin or of contact with the former has yet to be discovered, gives off the human branch, which grows up parallel with that of the Anthropoids, but without relation to it, and shoots beyond it.

The book concludes with a few words on the question of whether or not man has attained his perfection. The author's idea is that the volume of the brain cannot increase much more, though it is possible for the anterior lobes to become larger. One thing he thinks is certain, that dolichocephaly will be replaced by universal brachycephaly. Although the brain has probably attained its limits in respect to size, the limits to which the quality of its cells may improve are, as far as can be seen, uncircumscribed, and in this direction man may yet hope to attain to still higher perfection by the development of his intellectual faculties.

From the critical sketch we have given, it will be seen that the book is an important addition to anthropological literature. Not only will it be useful to anthropologists, but also to general readers who desire to obtain an insight into anthropology and to follow what is being done in that science. As an exposition of the subject, we have no hesitation in stating that it is a work of much merit, and worthy of the high reputation of its author. There remains yet the duty to be performed by the publishers, of putting it within the reach of a much wider range of readers than it is accessible to in its present form, by the publication at an early date of the English edition.

J. G. G.

FURNITURE WOODS.

The Art and Craft of Cabinet-making. By D. Denning. (London: Whittaker and Co., 1891.)

THIS neat little volume purports to be "a practical hand-book to the construction of cabinet furniture, the use of tools, formation of joints, hints on designing and setting out work, veneering, &c., together with a review of the development of furniture." It is well planned, and written in a pleasing and simple style, and appears admirably adapted for its purpose in general.

There is one drawback to this book, common to all works of its kind, and that is the meagre information given in the section dealing with the various kinds of woods employed. These woods are mahogany, cedar, oak, walnut, ash, rosewood, birch, beech, satinwood, pine, and a few others. The author argues that the amateur requires no information at all—or practically none—about these woods, but recommends him to trust a respectable dealer. We venture to remark that both the dealer and the amateur stand in need of, and would have been much interested in, a good description of these various woods.

It would at least have been worth mention that the word mahogany, like most trade names of the kind, may refer to very different woods: thus the Cuban or Spanish mahogany (*Swietenia Mahogani*, L.) is a very different wood from the mahogany of India (*Cedrela Toona*, Roxb.), which goes more commonly, perhaps, under the name of cedar (Moulmein cedar), another fallacious appellation, since it has nothing in common with the cedar of the botanist (*Cedrus*), or the pencil cedar of commerce, which is a *Juniper*, while it is closely allied to the "Cuban cedar," also known as Honduras and as Mexican cedar (*Cedrela odorata*, L.). The author is partially alive to this, as his remarks on p. 42 show; but we think he might have put the whole matter in a much clearer light by giving good descriptions of these very different woods. The African mahogany, from Sierra Leone, is a different wood again.

Under *oak*, the author, as elsewhere, begs the whole question by the remark, "Oak, like mahogany, is too well known to require any minute description." Possibly so—it all depends on the meaning of the word "minute"; but we think that such a work as this would be very much more useful if a description of the general distinctive characters of oak were given, and that the reader is entitled to expect such a description. He mentions that several kinds of oak are in the market, but this kind of thing only confuses, instead of helps, the reader.

Then, again, what does the author mean by "rosewood"? The rosewoods of India—*Dalbergia latifolia* (Roxb.) and *Pterocarpus indicus* (Willd.)—are by no means the only timbers which come into this country under that name, and the author might have done much more than merely remark that, "so far as mere appearance is concerned, there is not much difference between the various kinds."

We think that the author has missed an opportunity of compiling what is very much needed in this country, a concise and practical chapter on the distinctive characters of the various cabinet woods, on the lines, for instance, sketched in Marshall Ward's little manual on "Timbers, and some of their Diseases." The expectation that something of the kind might have been attempted is the fairer, since the author, in this very chapter on "furniture woods," goes out of his way to reinstruct amateurs in the use of the multiplication table and superficial measurements, which "may have been forgotten since their school days."

The statement on p. 57 that wood does not contract in length requires modification; and some of the remarks on warping and shrinking would be more intelligible to a reader who understood something of the structure of his woods.

The illustrations are numerous, and, on the whole, good and decidedly useful; and in spite of the omissions we point out, we think the book admirably adapted in many respects for the amateur's shelves.